

CLAIMS:

1. A water-soluble polyether glycol polymer which comprises: a structural backbone of carbon atoms and oxygen atoms where there are at least two consecutive carbon atoms present between each oxygen atom; a moiety on the backbone of the polymer or a functionalized derivative on the polymer, that is cationic at physiological pH and permits complexation with phosphate or oxalate; and an average molecular weight from about 5,000 to about 750,000 Daltons.
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2. The polymer of Claim 1 which comprises an average molecular weight from about 10,000 to about 750,000 Daltons.
- 10 3. The polymer of Claim 2 which comprises an average molecular weight from about 12,000 to about 300,000 Daltons.
4. The polymer of Claim 2 which comprises an average molecular weight from about 15,000 to about 80,000 Daltons.
- 15 5. The polymer of Claim 1 wherein the polymer has been derivatized with functional groups.
6. The polymer of Claim 5 wherein the functional groups are either directly connected to the polymer backbone or connected through C₂-C₆ alkylene or C₂-C₆ alkyl-C₆-C₁₂-aryl groups and are selected from halide, hydroxyl, sulfonate, phosphonate, nitro, amine, phosphine, carbonyl, carbamate, carboxylic and thio groups, or combinations of these
20 groups.
7. The polymer of Claim 6 wherein the polymer is a polyepihalohydrin derivative.
8. The polymer of Claim 7 wherein the polyepihalohydrin derivative has an average molecular weight of between about 15,000 to 80,000 Daltons.
9. The polymer of Claim 7 wherein the polyepihalohydrin derivative is
25 polyepichlorohydrin amine.
10. The polymer of Claim 9 wherein the derivative is a trimethylamine group.
11. The polymer of Claim 9 wherein the derivative is a triethyleneamine group.
12. The polymer of Claim 9 wherein the derivative is an ethylenediamine group.
13. The polymer of Claim 9 wherein the derivative is a diethylenetriamine group.
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14. The polymer of Claim 9 wherein the derivative is a tetraethylenepentamine group.
15. The polymer of Claim 9 wherein the derivative is a mixture of two or more amine groups.
16. The polymer of Claim 1 wherein the solubility of the polymer is at least 0.01
35 gram of the polymer per 1,000 mL of water.

17. The polymer of Claim 16 wherein the solubility of the polymer is from 1 to 10 grams of polymer per 1 mL of water.

18. A formulation for oral administration which comprises a polymer of Claim 1 with a pharmaceutically-acceptable carrier.

5 19. The formulation of Claim 18 wherein the polymer is a polyepihalohydrin derivative.

20. A method for the reduction of phosphonate or oxalate *in vivo* in an animal which comprises administering an effective amount of a formulation of Claim 18.

21. The method of Claim 20 wherein the formulation is of Claim 19.

10 22. The method of Claim 21 wherein the effective amount for reduction of phosphonate is from about 1 to about 15 grams per meal.

23. The method of Claim 21 wherein the effective amount for reduction of oxalate is from 0.6 to about 5 grams per meal.

15 24. A use of a polymer of Claim 1 as an agent for the reduction of phosphonate or oxalate *in vivo* in an animal.

25. A process for preparing the polymer of Claim 1 which comprises reacting an epihalohydrin, in the presence of a Lewis acid of moderate strength, in a solvent that will not act as a chain terminator.

26. The process of Claim 25 wherein the solvent is dichloromethane.

20 27. A process for preparing the polymer of Claim 1 which comprises reacting a 3,4-dichloro-1,2-butane oxirane, in the presence of a Lewis acid of moderate strength, in a solvent that will not act as a chain terminator.

28. The process for preparing a polymer as defined in Claim 1 wherein a catalyst is present selected from triethyloxonium hexafluorophosphate, fluoboric acid, triethyl 25 aluminum, and 1,2-ethyl di(trifluoromethanesulfonate).